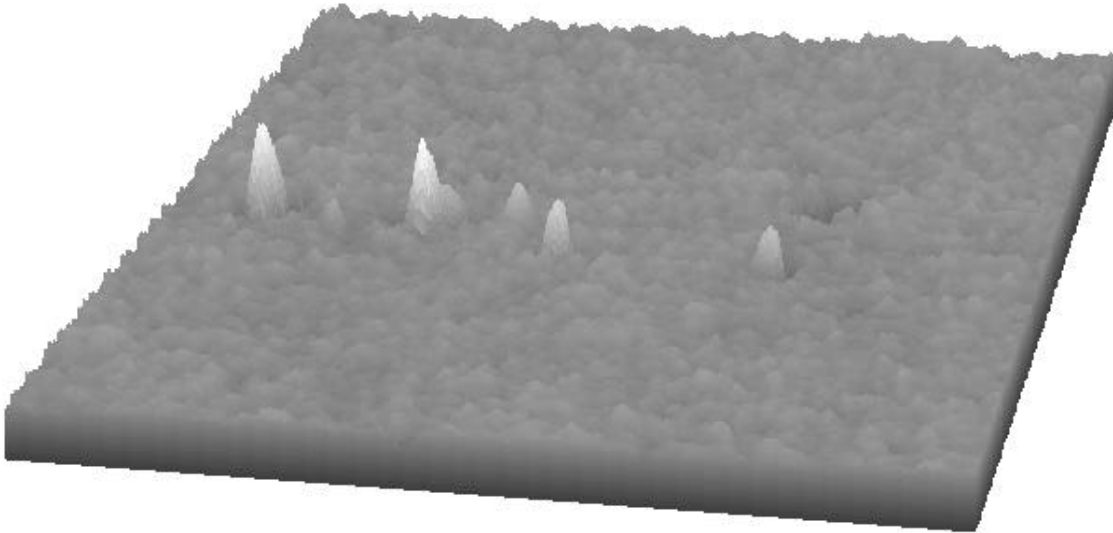
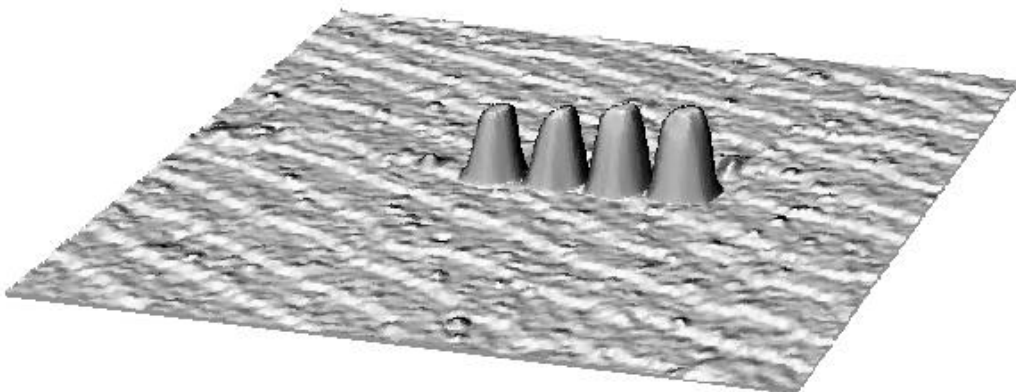


Coulomb Blockade

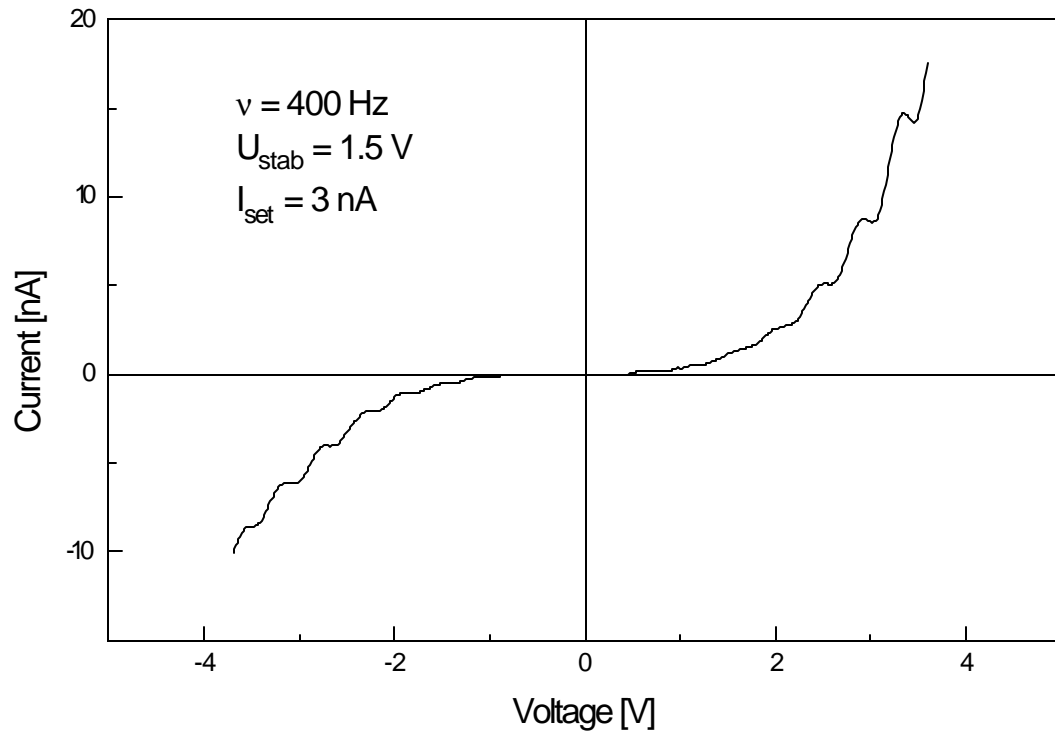
- Au/Si(111)
- Single electron tunneling



3D-STM image showing 5 Au dots deposited on Si(111) substrate by voltage pulsing. A voltage of -18V has been applied to the STM-tip. The 2 large Au dots on the left were deposited with a pulse width of 450ns (5nm in height and 25nm of FWHM). Upon reducing the pulse width to 300ns the Au dots dimensions can be reduced as indicated by the 3 smaller Au dots ($2\text{-}3\text{ nm}$ in height and $10\text{-}15\text{ nm}$ of FWHM)



3D-STM image showing 4 Au dots deposited on Si(111) substrate by voltage pulsing, after optimization of the deposition process. The Si(111) atomic 0.31nm steps could be observed.



Coulomb staircase recorded, when the double-barrier tunnel junctions have been formed by the STM-tip/vacuum/Au dot on one side and by the Au dot/Si(111) substrate on the other side.

This STM-induced single tunneling phenomenon was observed at room temperature.